CLAIMS

1. An adaptable power and mounting system for equipment, the system comprising:

a plurality of equipment racks, each one of the equipment racks having at least a first power input to receive power to power equipment contained in each of the equipment racks; and

a first power distribution rack that provides power to the equipment racks, the first power distribution rack including a power distribution panel and a plurality of output power cables, each having a first end coupled to the power distribution panel and a second end having a mating connector that mates with the first power input of at least one of the plurality of equipment racks.

2. The system of claim 1, wherein the plurality of equipment racks and the first power distribution rack are designed to be installed in a facility in a predetermined arrangement, whereby each rack is at a predetermined distance from the power distribution rack, wherein each of the plurality of cables mates with a respective one of the plurality of equipment racks, and each one of the plurality of cables has a length based on the predetermined distance between the power distribution rack and the respective one of the plurality of equipment racks for the one of the plurality of cables.

3. The system of claim 1, wherein the first power distribution rack further includes:

a main power input to receive input power having a first voltage value from a first power source; and

a transformer coupled to the main power input and to each of the plurality of output power cables to provide output power having a second voltage, lower than the first voltage, to the plurality of output power cables.

4. The system of claim 1, wherein each of the plurality of equipment racks has a second power input, and wherein the system further comprises a second power distribution rack that provides power to the plurality of equipment racks, the second power distribution

rack including a power distribution panel and a plurality of output power cables, each having a first end coupled to the power distribution panel of the second power distribution rack and a second end having a mating connector that mates with the second power input of one of the plurality of equipment racks.

5. The system of claim 4, wherein the second power distribution rack further includes:

a main power input to receive input power having a first voltage value from a second power source; and

a transformer coupled to the main power input and to each of the output power cables of the second power distribution rack to provide output power having a second voltage, lower than the first voltage, to the plurality of output power cables of the second power distribution rack.

6. The system of claim 5, wherein the plurality of equipment racks are arranged in a type of row having a first end and a second end, with the first power distribution rack being adjacent the first end of the row and the second power distribution rack being adjacent the second end of the row.

7. The system of claim 1, wherein each of the plurality of equipment racks includes at least one receptacle unit having a plurality of power outlets to provide power to equipment in the racks.

8. The system of claim 7, wherein at least one of the receptacle units in one of the equipment racks has a power cord having a connector that functions as the power input for the one of the plurality of equipment racks.

9. The system of claim 8, wherein at least one of the receptacle units in one of the plurality of equipment racks is removably mounted to the one of the equipment racks using a snap fit.

10. The system of claim 7, wherein the power provided to at least one of the plurality of equipment racks from the first power distribution rack is three phase power, and wherein the outlets of a receptacle unit in the one of the plurality of equipment racks are arranged in at least three groups with at least one outlet in each group being constructed to provide single phase power from one of the three phases of the input power.

11. The system of claim 7, wherein the power provided to at least one of the plurality of equipment racks from the first power distribution rack is three phase power, and wherein the outlets of a receptacle unit in the one of the plurality of equipment racks are arranged in at least four groups with at least one group being constructed to provide three phase power, and at least one group being constructed to provide single phase power.

12. The system of claim 7, wherein the receptacle unit in at least one of the plurality of equipment racks has an over current device that interrupts power to at least one outlet upon detection of an over current condition.

13. The system of claim 2, wherein each one of the plurality of power cables includes a label that indicates the respective equipment rack for the one of the power cables.

14. The system of claim 7, further comprising a first communications network, and wherein a plurality of the receptacle units and the power distribution rack include a communications circuit coupled to the first communications network.

15. The system of claim 14, further comprising a consolidator unit having a first communications circuit coupled to the first communication network to communicate with the plurality of receptacle units and the power distribution rack to receive status information.

16. The system of claim 15, wherein the consolidator unit further includes a second communications circuit to communicate with a second communications network.

17. The system of claim 15, wherein the first communications network is a power line carrier based network, and wherein the second communications network is an Internet protocol based network.

18. The system of claim 1, wherein each one of the plurality of equipment racks has a roof section with a power cable track mounted on the roof section, wherein the power cable track is constructed and arranged to contain a portion of at least one of the plurality of power cables to route the one of the power cables from the power distribution rack to one of the plurality of equipment racks.

19. The system of claim 18, wherein the roof section has an opening to allow a power cable to pass from the power cable track to within the rack or from within the rack to the roof of the rack.

20. The system of claim 19, wherein the power cable track of a first one of the plurality of equipment racks is constructed and arranged to mate with the power cable track of an adjacent second one of the plurality of equipment racks to form a continuous power cable track across the roof sections of the first one of the plurality of equipment racks and the second one of the plurality of equipment racks.

21. The system of claim 18, wherein each of the plurality of equipment racks includes a data cable track mounted on the roof section, and wherein each of the data cable tracks and the power cable tracks has a length that is greater than a width, and each one of the data cable tracks is mounted on the roof of an equipment rack such that the length of the one of the data cable tracks is substantially parallel to the length of a power cable track mounted on the roof of the equipment rack.

22. The system of claim 21, wherein each one of the power cable tracks is mounted on risers on the roof to provide a space between the one of the power cable tracks and the roof to allow a data cable to pass from a data cable track on the roof beneath the one of the power cable tracks and through the opening in the roof.

23. The system of claim 18, further comprising a bridge power cable track configured to mate with a power cable track on a first one of the plurality of equipment racks and to mate with a power cable track on a second one of the plurality of equipment racks to provide a continuous power cable track from the first one of the plurality of equipment racks to the second one of the plurality of equipment racks, and wherein the first one of the plurality of equipment racks and the second one of the equipment racks is separated by an aisle with the bridge power cable track passing over the aisle.

24. The system of claim 23, wherein each of the power cable tracks and the bridge power cable track has a length greater than a width, and the length of the bridge power track is substantially perpendicular to the length of at least one of the power cable tracks on the first one of the plurality of equipment racks and the power cable track on the second one of the plurality of equipment racks.

25. The system of claim 1, further comprising an uninterruptible power supply (UPS) having a plurality of power modules and battery modules, the UPS being positioned adjacent the first power distribution rack and having an input coupled to the first power distribution rack to receive input power from the first power distribution rack and having an output to provide one of the input power and backup power derived from the battery modules to the first power distribution rack.

26. The system of 25, wherein the equipment racks are aligned in a row having a first end and a second end, and wherein the first power distribution rack is positioned adjacent the first end of the row.

27. The system of claim 25, wherein the first power distribution rack further includes a bypass switch having a first input to receive input power, a first output to provide the input power to the UPS, a second input coupled to the output of the UPS and a second output, wherein the bypass switch has a first electrical position in which the first input is coupled to the first output and the second input is coupled to the second output and a second electrical position in which the first input is coupled to the second output.

28. The system of claim 2, wherein the first power distribution rack further includes:

a main power input to receive input power having a first voltage value from a first power source; and

a transformer coupled to the main power input and to each of the output power cables to provide output power having a second voltage, lower than the first voltage, to the output power cables.

29. The system of claim 28, wherein each of the plurality of equipment racks includes a receptacle unit having a plurality of power outlets to provide power to equipment in the plurality of equipment racks.

30. The system of claim 29, wherein at least one of the receptacle units in one of the plurality of equipment racks has a power cord having a connector that functions as the power input for the one of the plurality of equipment racks.

31. The system of claim 30, wherein at least one of the receptacle units in one of the plurality of equipment racks is removably mounted to the one of the plurality of equipment racks using a snap fit.

32. The system of claim 29, wherein the power provided to at least one of the plurality of equipment racks is three phase power, and wherein the outlets of the receptacle unit in the one of the plurality of equipment racks are arranged in at least three groups with at least one outlet in each group being constructed to provide single phase power from one of the three phases of the input power.

33. The system of claim 32, wherein the power provided to at least one of the plurality of equipment racks from the first power distribution rack is three phase power, and wherein the outlets of a receptacle unit in the one of the plurality of equipment racks are arranged in at least four groups with at least one group being constructed to provide three phase power, and at least one group being constructed to provide single phase power.

34. The system of claim 33, wherein the receptacle unit in at least one of the equipment racks has an over current device that interrupts power to at least one outlet upon detection of an over current condition.

35. The system of claim 29, wherein each one of the plurality of power cables includes a label that indicates the respective equipment rack for the one of the power cables.

36. The system of claim 29, further comprising a first communications network, and wherein a plurality of the receptacle units and the power distribution rack include a communications circuit coupled to the first communications network.

37. The system of claim 36, further comprising a consolidator unit having a first communications circuit coupled to the first communication network to communicate with the plurality of receptacle units and the power distribution rack to receive status information.

38. The system of claim 37, wherein the consolidator unit further includes a second communications circuit to communicate with a second communications network.

39. The system of claim 38, wherein the first communications network is a power line carrier based network, and wherein the second communications network is an Internet protocol based network.

40. The system of claim 36, wherein each one of the plurality of equipment racks has a roof section with a power cable track mounted on the roof section, wherein the power cable track is constructed and arranged to contain a portion of at least one of the plurality of power cables to route the one of the plurality of power cables from the power distribution rack to one of the equipment racks.

41. The system of claim 40, wherein the roof section has an opening to allow a power cable to pass from the power cable track to within the rack or from within the rack to the roof of the rack.

42. The system of claim 41. wherein the power cable track of a first one of the equipment racks is constructed and arranged to mate with the power cable track of an adjacent second one of the equipment racks to form a continuous power cable track across the roof sections of the first one of the equipment racks and the second one of the equipment racks.

43. The system of claim 40, wherein each of the plurality of equipment racks includes a data cable track mounted on the roof section, and wherein each of the data cable tracks and the power cable tracks has a length that is greater than a width, and each one of the data cable tracks is mounted on the roof of an equipment rack such that the length of the one of the data cable tracks is substantially parallel to the length of a power cable track mounted on the roof of the equipment rack.

44. The system of claim 43, wherein each one of the power cable tracks is mounted on risers on the roof to provide a space between the one of the power cable tracks and the roof to allow a data cable to pass from a data cable track on the roof beneath the one of the power cable tracks and through the opening in the roof.

45. The system of claim 44, further comprising a bridge power cable track configured to mate with a power cable track on a first one of the plurality of equipment racks and to mate with a power cable track on a second one of the plurality of equipment racks to provide a continuous power cable track from the first one of the equipment racks to the second one of the equipment racks, and wherein the first one of the plurality of equipment racks and the second one of the equipment racks is separated by an aisle with the bridge power cable track passing over the aisle.

46. The system of claim 45, wherein each of the power cable tracks and the bridge power cable track has a length greater than a width, and the length of the bridge power track is substantially perpendicular to the length of at least one of the power cable track on the first one of the plurality of equipment racks and the power cable track on the second one of the plurality of equipment racks.

47. The system of claim 43, further comprising an uninterruptible power supply (UPS) having a plurality of power modules and battery modules, the UPS being positioned adjacent the first power distribution rack and having an input coupled to the first power distribution rack to receive input power from the first power distribution rack and having an output to provide one of the input power and backup power derived from the battery modules to the first power distribution rack.

48. The system of claim 47, wherein each of the plurality of equipment racks has a second power input, and wherein the system further comprises a second power distribution rack that provides power to the equipment racks, the second power distribution rack including a power distribution panel and a plurality of output power cables, each having a first end coupled to the power distribution panel of the second power distribution rack and a second end having a mating connector that mates with the second power input of at least one of the plurality of equipment racks.

49. The system of claim 48, wherein the second power distribution rack further includes:

a main power input to receive input power having a first voltage value from a second power source; and

a transformer coupled to the main power input and to each of the output power cables to provide output power having a second voltage, lower than the first voltage, to the output power cables of the second power distribution rack.

50. The system of claim 49, wherein the equipment racks are arranged in a type of row having a first end and a second end, with the first power distribution rack being adjacent the first end of the row and the second power distribution rack being adjacent the second end of the row.

51. The system of claim 50, wherein the first power distribution rack further includes a bypass switch having a first input to receive input power, a first output to provide the input power to the UPS, a second input coupled to the output of the UPS and a second output, wherein the bypass switch has a first electrical position in which the first input is

coupled to the first output and the second input is coupled to the second output and a second electrical position in which the first input is coupled to the second output.

52. An adaptable power and mounting system for equipment, the system comprising:

a plurality of equipment racks, each one of the equipment racks having at least a first power input to receive power to power equipment contained in each of the equipment racks;

a first power distribution rack that provides power to the equipment racks, the first power distribution rack including a power distribution panel and a first plurality of output power cables, each having a first end coupled to the power distribution panel and a second end that mates with the first power input of at least one of the plurality of equipment racks; and

an uninterruptible power supply (UPS) having at least one battery, the UPS being positioned adjacent the first power distribution rack and having an input coupled to the first power distribution rack to receive input power from the first power distribution rack and having an output to provide one of the input power and backup power derived from the at least one battery to the first power distribution rack

wherein the first power distribution rack further includes a bypass switch having a first input to receive input power, a first output to provide the input power to the UPS, a second input coupled to the output of the UPS and a second output, wherein the bypass switch has a first electrical position in which the first input is coupled to the first output and the second input is coupled to the second output and a second electrical position in which the first input is coupled to the second output.

53. The system of claim 52, wherein each of the plurality of equipment racks has a second power input, and wherein the system further comprises a second power distribution rack that provides power to the equipment racks, the second power distribution rack including a power distribution panel and a second plurality of output power cables, each having a first end coupled to the power distribution panel of the second power distribution rack and a second end that mates with the second power input of at least one of the plurality of equipment racks.

54. The system of claim 53, wherein the first power distribution rack further includes:

a main power input to receive input power having a first voltage value from a first power source; and

a transformer coupled to the main power input and to the first input of the bypass switch to provide output power having a second voltage, lower than the first voltage.

55. The system of claim 54, wherein the equipment racks are arranged in row having a first end and a second end, with the first power distribution rack being adjacent the first end of the row and the second power distribution rack being adjacent the second end of the row.

56. The system of claim 52, wherein the UPS is a scalable UPS having a plurality of independently removable power modules and independently removable battery modules.

57. An adaptable power and mounting system for equipment, the system comprising:

a plurality of equipment racks, each one of the equipment racks having at least a first power input to receive power to power equipment contained in each of the equipment racks; and

a first power distribution rack that provides power to the equipment racks, the first power distribution rack including a power distribution panel and a plurality of output power cables, each having a first end coupled to the power distribution panel and a second end that mates with the first power input of at least one of the plurality of equipment racks;

wherein each one of the plurality of equipment racks has a roof section with a power cable track mounted on the roof section, wherein the power cable track is constructed and arranged to contain a portion of at least one of the plurality of power cables to route the one of the power cables from the first power distribution rack to one of the equipment racks.

58. The system of claim 57, wherein the roof section has an opening to allow a power cable to pass from the power cable track to within an equipment rack or from within the equipment rack to the roof of the rack.

59. The system of claim 58, wherein the power cable track of a first one of the equipment racks is constructed and arranged to mate with the power cable track of an adjacent second one of the equipment racks to form a continuous power cable track across the roof sections of the first one of the equipment racks and the second one of the equipment racks.

60. The system of claim 57, wherein each of the plurality of equipment racks includes a data cable track mounted on the roof section, and wherein each of the data cable tracks and the power cable tracks has a length that is greater than a width, and each one of the data cable tracks is mounted on the roof of an equipment rack such that the length of the one of the data cable tracks is substantially parallel to the length of a power cable track mounted on the roof of the equipment rack.

61. The system of claim 60, wherein each one of the power cable tracks is mounted on risers on the roof to provide a space between the one of the power cable tracks and the roof to allow a data cable to pass from a data cable track on the roof beneath the one of the power cable tracks and through the opening in the roof.

62. The system of claim 57, further comprising a bridge power cable track configured to mate with a power cable track on a first one of the plurality of equipment racks and to mate with a power cable track on a second one of the plurality of equipment racks to provide a continuous power cable track from the first one of the equipment racks to the second one of the equipment racks, and wherein the first one of the plurality of equipment racks and the second one of the equipment racks is separated by an aisle with the bridge power cable track passing over the aisle.

63. The system of claim 62, wherein each of the power cable tracks and the bridge power cable track has a length greater than a width, and the length of the bridge power track is substantially perpendicular to the length of the power cable track on the first one of the plurality of equipment racks and the power cable track on the second one of the plurality of equipment racks.

64. A method of installing equipment in a plurality of equipment racks in a facility, the method comprising:

providing a first power distribution rack having a power distribution panel;

determining a location for the first power distribution rack and the plurality of equipment racks in the facility;

based on the location of the plurality of equipment racks and the first power distribution rack, determining a necessary length of each one of a first plurality of power cables, such that each one of the first plurality of power cables can be coupled between the first power distribution rack and one of the plurality of equipment racks with a first end of each power cable being coupled to the power distribution panel and a second end being coupled to one of the plurality of equipment racks; and

connecting the first end of each of the first plurality of power cables to the power distribution panel; and

installing a connector on the second end of each of the first plurality of cables, the connector being selected to mate with an input connector of each of the plurality of equipment racks.

65. The method of claim 64, further comprising:

after installing the connectors, packaging the first plurality of cables and the power distribution rack for shipment to the facility.

66. The method of claim 65, wherein each of the plurality of equipment racks includes a roof having a power cable track mounted thereon, and wherein the method further comprises steps of:

routing each of the first plurality of power cables out of a hole in the top of the first power distribution rack;

routing each of the plurality of power cables through at least one of the power cable tracks; and

mating the connector on the second end of each of the first plurality of power cables with a connector of a first power input cable of one of the plurality of equipment racks.

67. The method of claim 66, further comprising mounting a first power receptacle unit including the first power input cable in at least one of the plurality of equipment racks, prior to mating the connector on the second end with a connector of the first power input cable.

68. The method of claim 67, further comprising:

providing a second power distribution rack having a power distribution panel;

determining a location in the facility of the second power distribution rack;

based on the location of the plurality of equipment racks and the second power distribution rack, determining a necessary length of each one of a second plurality of power cables, such that each one of the second plurality of power cables can be coupled between the second power distribution rack and one of the plurality of equipment racks with a first end of each of the second plurality of power cables being coupled to the power distribution panel of the second power distribution rack and a second end being coupled to one of the plurality of equipment racks; and

connecting the first end of each of the second plurality of power cables to the power distribution panel of the second power distribution rack; and

installing a connector on the second end of each of the second plurality of cables, the connector being selected to mate with an input connector of each of the plurality of equipment racks.

69. The method of claim 68, further comprising:

after installing the connectors on the second end of each of the second plurality of cables, packaging the second plurality of cables and the second power distribution rack for shipment to the facility.

70. The method of claim 69, wherein the method further comprising:

routing each of the second plurality of power cables out of a hole in the top of the second power distribution rack;

routing each of the second plurality of power cables through at least one of the power cable tracks; and

mating the connector on the second end of each cable of the second plurality of power cables with a connector of a second power input cable of one of the plurality of equipment racks.

71. The method of claim 70, further comprising mounting a second power receptacle unit including the second power input cable in at least one of the plurality of equipment racks, prior to mating the connector on the second end of each cable with a connector of a second power input cable.

72. The method of claim 71, wherein determining a necessary length of the first plurality of power cables includes using a computer aided design program to determine location of the plurality of equipment racks and the first power distribution rack in the facility.

73. The method of claim 72, further comprising installing a first uninterruptible power supply adjacent the first power distribution rack, and installing a second uninterruptible power supply adjacent the second power distribution rack.

74 The method of claim 64, wherein each of the plurality of equipment racks includes a roof having a power cable track mounted thereon, and wherein the method further comprises:

routing each of the first plurality of power cables out of a hole in the top of the first power distribution rack;

routing each of the plurality of power cables through at least one of the power cable tracks; and

mating the connector on the second end of each of the first plurality of power cables with a connector of a first power input cable of one of the plurality of equipment racks.

75. The method of claim 74, further comprising mounting a first power receptacle unit including the first power input cable in at least one of the plurality of equipment racks, prior to mating the connector on the second end with a connector of the power input cable.

76. The method of claim 64, further comprising:

providing a second power distribution rack having a power distribution panel;

determining a location in the facility of the second power distribution rack;

based on the location of the plurality of equipment racks and the second power distribution rack, determining a necessary length of each one of a second plurality of power cables, such that each one of the second plurality of power cables can be coupled between the second power distribution rack and one of the plurality of equipment racks with a first end of each of the second plurality of power cables being coupled to the power distribution panel in the second power distribution rack and a second end being coupled to one of the plurality of equipment racks; and

connecting the first end of each of the second plurality of power cables to the power distribution panel of the second power distribution rack; and

installing a connector on the second end of each of the second plurality of cables, the connector being selected to mate with an input connector of each of the plurality of equipment racks.

77. The method of claim 76, wherein the method further comprises:

routing each of the second plurality of power cables out of a hole in the top of the second power distribution rack;

routing each of the second plurality of power cables through at least one of the power cable tracks; and

mating the connector on the second end of each cable of the second plurality of power cables with a connector of a second power input cable of one of the plurality of equipment racks.

78. The method of claim 77, further comprising mounting a second power receptacle unit including the second power input cable in at least one of the plurality of equipment racks, prior to mating the connector on the second end of each cable with a connector of a second power input cable.

79. The method of claim 64, wherein determining a necessary length of the first plurality of power cables includes using a computer aided design program to determine

location of the plurality of equipment racks and the first power distribution rack in the facility.

80. The method of claim 64, further comprising providing an uninterruptible power supply contained in a rack, the uninterruptible power supply having batteries to provide backup power, a power input to receive power from the first power distribution rack, and a power output to provide one of the power received from the first power distribution rack and the backup power to the power distribution rack.

81. The method of claim 64, wherein each of the plurality of equipment racks has a data cable track mounted on the roof, and wherein the method further includes a step of routing a data cable from a first device in a first of the plurality of equipment racks to a second device in a second of the plurality of equipment racks through at least one of the data cable tracks.